

The National Park Service
U.S. Department of the Interior

Biological Resource Management Division



Biological Resource Management Division Annual Report – FY 2001



Appalachian National Scenic Trail

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FY 2001 Funding \$3,441,000

Active resource management has become critically necessary as the natural heritage preserved within park boundaries is assailed by exotic species, and other human caused disturbances. The Biological Resource Management Division (BRMD) assists parks to address resource management issues by providing a professional and innovative state of the art science based support program on exotic species management, terrestrial ecosystem restoration, threatened and endangered species protection, and wildlife management. The Division facilitates a systematic and nationwide approach in response to increasing management needs of biological resources on park lands.

Exotic Plant Control and Strategic Biological Support Funding

Available in FY 2000 \$3,449,000

Natural Resources Challenge Funding in FY 2001:

Exotic Plant Management Teams & Ecological Restoration \$1,916,000

Endangered Species Program \$ 260,000

Integrated Pest Management \$ 197,000

Wildlife Program \$ 383,000

Biological Resource Projects \$ 685,000

FY 2001 TOTAL \$3,441,000

Highlights of these efforts on behalf of park resources and funded through the Natural Resource Challenge include:

Exotic Species Management Teams and Ecological Restoration

Funding Allocation: \$1,916,000

The national parks are home to complex native communities of plants and animals that have developed over millions of years. This natural heritage is threatened by the invasion of exotic plants and animals and other human caused disturbances that foster the establishment of exotic species. The introduction of harmful exotic species is an emerging global problem. A recent Cornell University study estimates that invasive plants and animals cost Americans \$137 billion annually. The Ecological Society of America notes that invasive species contribute to the listing of 35-46% of all threatened and endangered species. Today exotic plants infest some 2.6 million acres in the national parks. Control of exotic species is one of most significant land management issues facing national parks. New innovative resource management tools such as Exotic Plant Management Teams (EPMT's) and ecological restoration are helping to protect our natural heritage.

For Exotic Plant Management Teams – See EPMT Annual Report -FY 2001

Ecological Restoration

BRMD has actively worked to incorporate biological and ecological expertise to cross-cutting natural resource issues such as wildland fire, contaminants and ecological restoration of degraded areas. Highlights of the restoration program in each of these issue areas are described below:

Fire Management

BRMD increased its efforts to work with the Fire Management Program Center through participation in meetings and conferences to promote integrated fire and resource management. BRMD has also developed a framework for a proposed training course on the integration of natural resource and fire management objectives. Internally, NPS created a Natural Resource Program Center Fire Advisory Group to address park natural resource issues related to fire. BRMD has also increased efforts to coordinate activities and communicate with the Fire Program through participation on interagency teams preparing implementation plans to Congress for Fuels Management and Native Plant Material Development. BRMD's Ecologist also initiated joint consultation visits to Parks with Fire Program Regional Fire Ecologists (eg Lake Roosevelt) and has identified this area of expertise as BRMD's focus areas for technical assistance to parks.



Wildland fire use at Scotts Bluff NM for natural resource management

Degraded Ecosystem Restoration

The BRMD restoration program began collaborative park-based projects to restore degraded areas at Big Bend NP (massive soil erosion) and Fort Union Trading Post NHS (degraded prairie community). The restoration ecologist will address fourteen new project requests from parks in the coming fiscal year, dealing with restoration needs involving visitor use, past-land use practices such as domestic grazing or forestry plantations, and the reintroduction of grazers. Prepared a revision to vegetation management guidance that adds more ecological management concepts to integrate natural processes and other management activities into park planning, and has provided technical guidance to funded restoration projects at Sleeping Bear Dunes National Lakeshore, Pictured Rocks National Lakeshore, Cape Hatteras National Seashore and Point Reyes National Seashore. The BRMD restoration ecologist worked with Cultural Resource and Maintenance staff at Valley Forge to develop strategies for eastern parks to establish native plants on historic earthworks.

Assessment Teams

The BRMD restoration ecologist participated on interdisciplinary resource assessment teams for flood damage at New River Gorge NSR and grazing impacts at Glen Canyon NRA.

Contaminants



Smelter operations at Palmerton, PA led to the collapse of soil food webs supporting vegetation along the Appalachian Trail. The result is a denuded landscape on Blue Mountain

The BRMD restoration program is leading technical discussions for NPS with the Environmental Protection Agency (EPA) to develop a mutually acceptable solution to remediate and restore natural systems on the Appalachian Trail in Pennsylvania. The BRMD is also working with an interdisciplinary team to evaluate issues related to a mine haul road through Cape Krusenstern National Monument, and works on other contaminant issues with the NRPC-Operations HazMat Program Contaminants Technical Advisory Group.

Endangered Species Program

Funding Allocation: \$260,000

During FY2001 the Natural Resource Challenge again provided important opportunities for the Endangered Species Program to contribute to the stabilization and recovery of threatened and endangered species in national parks. We have updated the NPS endangered species databases (see Table 1) and now are writing summaries of needed recovery actions for each listed species that occurs in NPS units. These concise reviews can be utilized by NPS resource managers to identify project priorities for NRPP funding and to evaluate the effects of park operations on listed species.

The Endangered Species Program is working closely with the Smithsonian Institution to provide more efficient curation of specimens collected in national parks and is also working on a new program to preserve seeds from endangered plants with the National Seed Storage Laboratory and Center for Plant Conservation. Program endangered species biologists have provided technical assistance to park units from coast to coast, including



Island fox at Channel Islands NP

advice on listed plants and birds to Colonial National Historical Park as it prepares for its 400th anniversary and to Channel Islands National Park which has brought its endemic island foxes into a captive breeding program. The final 2001 issue of the Endangered Species Bulletin will focus exclusively on conservation efforts in national parks; there are articles from each NPS region as well as an overview of the NPS program.

The Endangered Species Program has taken a lead role in drafting and negotiating memoranda of understanding with other federal agencies in order to prevent further species declines. An MOU on black-tailed prairie dogs, another on amphibians and reptiles, and a third on migratory birds will provide NPS managers with clear direction in conservation efforts. In order to stabilize species that move beyond park boundaries, the Endangered Species Program has helped the NPS develop new partnerships with Bat Conservation International, Partners in Flight, and the International Association of Fish and Wildlife Agencies.

Table 1. The number of endangered, threatened, proposed, and candidate species found in National Park Service units (as of September 30, 2001).

Taxonomic Group	Species
Plants	193
Invertebrates	43
Fish	40
Amphibians	4
Reptiles	19
Birds	53
Mammals	46
Total	398

Integrated Pest Management

Funding Allocation: \$197,000

The NPS Integrated Pest Management Program (IPM), viewed as a model by other resource agencies in managing pest species, continues to provide a broad range of technical services and IPM training in FY 2001. The IPM Program provides low risk strategies for the management of exotic and native pests adversely affecting park management objectives through training and technical assistance. This technical assistance is provided to more than 100 parks per year through on site consultations by IPM staff,



Testing rodents for hantavirus at Rock Creek NP

providing material or remote consultations on problems and by identifying other experts who provide assistance to park personnel. The technical assistance provided by the IPM program often results in a more economical and permanent solution to pest management problems. The IPM program not only assists with natural resource management, pest management issues but assists many other program areas within the service including, operations, concessions, cultural resources and visitor safety. Provision of services to parks included; Refinement and updating the Pesticide Use Proposal (PUPs) web-based system in order to improve field service and rapid control of pest species; as a result nearly 1,400 nationwide PUPs were submitted by park personnel and reviewed by Service's IPM staff with increased efficiency. IPM Principles Courses for NPS personnel were conducted with attendance from 32 parks. A Mosquito Workshop was held enhancing technical training and oversight guidance in the management of West Nile Virus throughout the year. The NPS participates with federal and state agencies on a Center for Disease Control (CDC) effort to coordinate management and share information on West Nile Virus. A Termite Workshop was hosted to focus on effective, low risk IPM strategies for regional and field personnel from all divisions. The IPM program assisted Channel Islands National Park in obtaining EPA section 18 labeling on the rodenticide brodifacoum for management of exotic black rats in the Anacapa Island Rodent Eradication Project. This is the first pesticide specifically formulated and labeled for use for ecological reasons.

Wildlife Management Program

Funding Allocation: \$383,000

The BRMD's Wildlife Management Program provides policy guidance, technical assistance, and training to enhance the ability of park staff to meet the increasing, demands for professional wildlife management. This includes the areas of wildlife health, wildlife restoration, exotic species management, wildlife population management, and the identification of wildlife research needs. During the past year assistance was provided for the following:

Wildlife Capture

The Biological Resource Management Division provided technical assistance to parks via consultation, training, and fieldwork on wildlife capture and anesthesia. Three wildlife anesthesia training classes were provided to park staff in FY2001. Additionally, BRMD assisted with field work for the non-lethal removal of exotic species in two parks. With \$145,000 of NRPP funds and \$89,000 of park and contributed funds, 228 African Oryx have been translocated from White Sands National Monument in the last two years. Approximately 10-20 animals remain in the national monument. Efforts will continue in FY 2002 to remove the last of this exotic species. With \$899,000 of NRPP funding over the last three fiscal years a total of 1768 burros have been non-lethally removed from Mojave National Preserve (721 in FY 1999, 569 in FY2000, and 478 in FY2001). The park's ultimate goal is a population of zero. Efforts will continue to move the last of this exotic species.

Veterinary Diagnostics and Wildlife Health

Veterinary diagnostic services for wildlife are an important component of ecosystem health management. The Biological Resource Management Division has teamed with the National Wildlife Health Center, and through a CESU agreement, with Colorado State University Veterinary Diagnostic Laboratory to provide veterinary diagnostic services to national parks. Surveillance for emerging diseases, such as chronic wasting disease of deer and elk, as well as the more common diseases provides managers with valuable information to address wildlife health and public health concerns.

An outbreak of foot-and-mouth disease (FMD) in the United States could have dramatic impacts not only on the nation's domestic livestock, but on natural resources as well. The NPS proactively addressed the potential impacts of FMD on wildlife, other natural resources, and visitor opportunities by preparing FMD prevention and response plans. The plans were prepared using a unique combination of technical expertise provided by the Biological Resource Management Division and other science consultants with the emergency incident integrated response expertise of an NPS Type I Incident Management Team. The FMD prevention plan has been implemented in the NPS and the response plan stands ready if needed. Further, these plans serve as a template for NPS emergency response, for example in the case of bioterrorism, to other disease threats to wildlife species.

Collaborative work with former biodefense scientists in Russia is being explored to benefit our natural resources. Highly trained Russian biodefense scientists who may otherwise be directed toward risky projects now have a positive alternative--a new Russian-U.S. cooperative research program that assists scientists in applying their knowledge toward useful non-military projects. Planning is underway on a multi-tiered project that will have Russian scientists applying their expertise with brucella vaccines, vaccine enhancers, and delivery systems to address bison brucellosis management at Yellowstone National Park. The Biological Resource Management Division provided technical assistance to Yellowstone National Park in initiating this collaborative work that will be sponsored by the US Department of Defense and the Nuclear Threat Initiative.



"During a field trip to see North American bison in native habitats of Yellowstone National Park, visiting Russian scientists examine particles of obsidian, indicative of the park's volcanic history, on soil surface of Hayden Valley."

Improved methodology for wildlife population control by non-lethal means is a growing need of wildlife management agencies and parks. The Biological Resource Management Division collaborated with the Colorado Division of Wildlife on fertility control work funded by Rocky Mountain National Park. Initial results using a new contraceptive agent

in captive elk are promising and have been published in the journal *Reproduction*. After additional testing in captive elk this year, the contraceptive may soon be ready for field-testing.

Park Flight Migratory Bird Program

The Park Flight Migratory Bird Program works to protect shared migratory bird species and their habitats in both U.S. and Latin American national parks and protected areas. The program develops bird conservation and education projects and creates opportunities for technical exchange and cooperation. Park Flight is a partnership between NPS, National Park Foundation, National Fish & Wildlife Foundation, American Airlines, and the University of Arizona. The program is made possible through the generous support of American Airlines and the NPS Natural Resource Challenge. Technical direction is provided through the University of Arizona Desert Southwest Cooperative Ecosystem Studies Unit and NPS Biological Resource Management Division.

In FY01, Park Flight funded seven bird conservation and education projects encompassing thirteen U.S. national park units.

In cooperation with the National Fish and Wildlife Foundation/ USAID Neotropical Migratory Bird Conservation Program, Park Flight also funded priority projects at important bird conservation sites in Guatemala, El Salvador, Nicaragua, Honduras, Panama, and Mexico.

As part of the FY01 Park Flight technical exchange effort, interns from Mexico and Nicaragua assisted with monitoring and education efforts at Sequoia/Kings Canyon NP and Point Reyes NS/Golden Gate NRA. These technical exchanges are coordinated through the NPS Office of International Affairs International Volunteer in Parks program. In addition, an NPS employee provided technical assistance for a Park Flight project in Nicaragua.

BRMD also supported the publication of the American Birding Association (ABA) Opportunities for Birder 2001 Directory, and distributed these to all NPS units. This directory, which is sent to all ABA members, lists NPS and other agency needs for skilled birders to volunteer for bird inventory and monitoring efforts.

BRMD is working to broaden involvement with other national and international bird conservation initiatives, such as the North American Bird Conservation Initiative and Partners in Flight (PIF). BRMD supported International Migratory Bird Day (IMBD) 2001, providing educational materials to all park units and encouraging park participation



Salvadora Morales, a Park Flight intern from Nicaragua, shows a young visitor how to use binoculars during a migratory bird interpretive walk in Sequoia/Kings Canyon National Parks.

in IMBD activities. The Park Flight Migratory Bird Program Coordinator, is the NPS-PIF and NPS-IMBD Liaison.

Biological Resource Projects – National Level Support

Funding Allocation: \$685,000

These funds were for biological resource projects that address national issues facing various park units and benefiting multiple partners. Projects this year included; feral cat management program, island invasive rat control, natural resource impacts from recreational use of Cape Hatteras National Seashore, sockeye salmon conservation, protecting sensitive park resources from trespass cattle at Sequoia and Kings Canyon National Parks and northern spotted owl demographic study. Other projects from this fiscal year include those listed below.

Park	Project Title	Funding Status
Lake Clark NP & Pres.	Tracking sockeye salmon	Complete
Badlands NP	Translocate and restore bighorn sheep	Ongoing
3 Hawaii Parks	Identify invasive plants threatening ecosystem	Complete
Cape Hatteras NS	Develop and Implement feral cat mgmt. Plan	Complete
Channel Islands NP	Eradicate black rats from San Miguel Island	Complete
Cape Hatteras NS	Determine natural resource impacts from recreation	Complete
Voyageurs NP	Protect Muskellunge in Shoepack Lake	Ongoing
Santa Monica Mts. NRA	Assess distribution and status of Mountain Lion	Ongoing
Cape Cod NS	Survey Horeshoe Crabs	Ongoing
Sequoia Kings Canyon NP's	Protect resource from trespass cattle	Complete
Golden Gate NRA	Northern Spotted Owl demographic study	Complete
Santa Monica Mts. NRA	Assess reptile and amphibian dist. & status	Ongoing
Rock Creek Park	Determine ecological vulnerability of Kenk's Amphipod	Ongoing

Tracking Sockeye Salmon Home: Salmon Conservation to Meet Park Mandates at Lake Clark NP & Preserve

Major sockeye salmon spawning aggregations were identified in the Lake Clark watershed using radio telemetry. Salmon were tagged as they entered Lake Clark and followed to their final spawning grounds. Basic habitat parameters were collected from select spawning areas. Contemporary migration paths and spawning distributions will be compared with historic spawning areas, subsistence and sport fishing areas, as well as with current development around Lake Clark.

The Pulling Together Initiative and the Plant Conservation Alliance

The National Fish and Wildlife Foundation coordinated with BRMD to implement two cost share programs that provide federal funds for park based partnership efforts. In both the Initiative and the Alliance, all federal funds must be matched at a minimum dollar for dollar. These partnerships focus on invasive plant management efforts and restoring native species. Examples of 10 projects funded this year included; Dinosaur NP weed control, restoration at Cowles Bog at Indiana Dunes-NS and Zion NP native plant restoration.

Technical Assistance

Technical Assistance and service to parks is the heart of the BRMD and Natural Resource Program Center (NRPC) operations. Through direct technical assistance, accessible to all parks, NRPC scientists not only share their expertise with parks, but maintain and improve their own professional status. It allows for information sharing, and adds “real-world” context to the development of national programs and policies.

Technical Assistance Requests – Fiscal Year 2001

Park Unit	Region	Topic
Western Arctic	AKR	Zinc accumulation in food chain
Carlsbad	IMR	Barbary sheep
Florissant Fossil	IMR	Review exotics plan
Florissant Fossil	IMR	Disturbed land restoration
Padre Island	IMR	Piping plover
Padre Island	IMR	Pest management
Saguaro	IMR	Restore abandoned roads
Saguaro	IMR	Restore abandoned roads
White Sands	IMR	African oryx
White Sands	IMR	African oryx
Zion	IMR	IPM
Fort Union	IMR	Prairie restoration
Big Bend	IMR	Proposal development for restoration
Fossil Butte	IMR	Tree pathology
Midwest Region	MWR	Wildlife Health Monitoring
Appalachian Trail	NCR	Zinc devastation of biota
Cape Cod	NER	Wildlife population model
Cape Cod	NER	Dev. tools to assess aquaculture
Colonial	NER	Review Ecological framework
Colonial	NER	Review Sinkhole Study
Colonial	NER	Review Macrobenthos research
Colonial	NER	Review Herp protocol
Colonial	NER	Inventory flora for I&M

Park Unit	Region	Topic
Colonial	NER	DEIS Jamestown 400
Colonial	NER	DEIS Green Springs
Fire Island	NER	Rev. Deer Feeding Project
Shenandoah	NER	Erosion control seeding
Shenandoah	NER	Animal Capture Course
Joshua Tree	PWR	Exotic goldfish
Joshua Tree	PWR	Beggar coyotes
Joshua Tree	PWR	IPM evaluation
Lake Roosevelt	PWR	Forest restoration
Mesa Verde	PWR	Spotted Owl
Mesa Verde	PWR	Reforestation/BAER
Mesa Verde	PWR	Fire impact on T&E plants
Olympic	PWR	Exotic goats
Point Reyes	PWR	Animal capture course
Sta. Monica	PWR	Animal capture protocol
Whiskeytown	PWR	T&E Species
Cape Hatteras	SER	Deer monitoring
Cumberland Island	SER	Wildlife capture training